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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,375	07/06/2006	Adrian Eng Choon Tan	L2005.0023/P023	2544
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DICKSTEIN SHAPIRO LLP			SHAH, TANMAY K	
1825 EYE STREET NW				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,375	Applicant(s) CHOON TAN ET AL.	
	Examiner TANMAY K. SHAH	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is in response to the Application No. 10/585,375 filed on 07/06/06. Claims 1 - 26 has been examined.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 - 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hyunseok Kim (Design of CMOS Scholtz's monocycle pulse generator) (Kim hereafter) in further view of Gerrits et al. (**US 5635876**).

Regarding claim 1, Kim teaches a method for generating a UWB signal comprising the step of differentiating a clock signal once (**i.e. Since there are an inductor and a capacitor as differentiator of current and differentiator of voltage, page 84, col 1, 2**) to obtain the UWB signal (**i.e. output is UWB signal, abstract**) wherein the step of differentiating the clock signal comprises feeding the clock signal (**i.e. input of the Fig. 5, page 84**) to an input of an amplifier (**i.e. inter-stage, the relation of Q4 and Q5 is inter-stage for current amplification**) and negatively feeding back an output of the amplifier (**i.e. as shown in Fig. 5, the output of the amplifier also shown in Fig. 4 as I_{out} is connected to filter as shown in Fig. as a capacitor and resistor**), through a

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filter, to the amplifier input (**i.e. as shown in Fig. 5 the output from the filter is fed back to the input**). However, it does not specifically disclose that the filter is a low pass filter.

Gerrits teaches a system with VCO (i.e. clock or oscillator) and amplifier which has feedback through LPF (**i.e. as shown in Fig. 3, the LPF2 feeds back the output from the amplitude control circuit. amplitude control circuit is shown in detail which is a amplifier**).

It would have been an obvious matter of design choice to one skilled in the art at the time the invention was made to use LPF provided by the inventor since applicant has not disclosed that this solves any stated problem or is anything more than hardware choice. A person of ordinary skill in the art would find obvious for the purpose of generating specific UWB pulses. In re Dailey and Eilers, 149 USPQ 47 (1966) see MPEP 2144.04.

Regarding claim 2, Kim with Gerrits teaches method of claim 1.

Kim further teaches the step of differentiating the UWB signal at least once (**i.e. Since there are an inductor and a capacitor as differentiator of current and differentiator of voltage, page 84, col 1, 2**) to generate a monocyclical or a polycyclical UWB signal (**i.e. the output voltage on the 50-ohm register load (please refer to Fig. 5) has a similar shape as Sholtz's monocycle pulse, page 4, col 84**).

Regarding claim 3, Kim with Gerrits teaches method of claim 1.

Kim further comprising the step of modulating a data signal with the UWB signal to obtain a modulated UWB signal (**i.e. it teaches it can be transmitted using RF communication system, in order to transmit using RF system signal has to be modulated, without carrier signal can not be transmitted, introduction, page 81**).

Regarding claim 4, Kim with Gerrits teaches method of claim 3.

Kim further comprising the step of differentiating the modulated UWB signal at least once to generate a monocyclical or a polycyclical UWB signal (**i.e. Since there are an inductor and a capacitor as differentiator of current and differentiator of voltage, page 84, col 1, 2**).

4. Claims 7 - 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hyunseok Kim (Design of CMOS Scholtz's monocycle pulse generator) (Kim hereafter) in further view of **Gerrits et al. (US 5635876)** in further view of **Fullerton et al. (US 2004/0136438)**.

Regarding claim 7, A method for generating a UWB signal in a system comprising:

an amplifier having an input and an output (i.e. **Fig. 5 inter stage, page 84, which has input and output also shown in and out in Fig. 4, page 83**);

negative feedback means (i.e. **as shown in Fig. 5, the output of the amplifier also shown in Fig. 4 as I_{out} is connected to filter as shown in Fig. as a capacitor and resistor**);

filtering means (i.e. **as shown in Fig. 5 the output from the filter is fed back to the input**); and

wherein the method comprises:

providing an output of the system to the filtering means to produce a filtered output (i.e. **as shown in Fig. 5, the output of the amplifier also shown in Fig. 4 as I_{out} is connected to filter as shown in Fig. as a capacitor and resistor**);

feeding back, by the negative feedback means, the amplifier low-pass filtered output to the input of the amplifier (i.e. **as shown in Fig. 5 the output from the filter is fed back to the input**);

the output of the system is an amplified differential of an input signal to the system (i.e. **Fig. 5 inter stage, page 84, which has input and output also shown in and out in Fig. 4, page 83, as described it amplifies the input, page 84, col 1, above Fig. 5**); and

whereby a UWB pulse is produced for transmission. However it does not specifically disclose that it uses a low-pass filter. Also, it explains that DC component is unwanted in the system (**page 82, col 1, below Fig. 2**), however does not specifically disclose it removes the DC component.

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Gerrits teaches a system with VCO (i.e. clock or oscillator) and amplifier which has feedback through LPF (i.e. **as shown in Fig. 3, the LPF2 feeds back the output from the amplitude control circuit. amplitude control circuit is shown in detail which is a amplifier**).

It would have been an obvious matter of design choice to one skilled in the art at the time the invention was made to use LPF provided by the inventor since applicant has not disclosed that this solves any stated problem or is anything more than hardware choice. A person of ordinary skill in the art would find obvious for the purpose of generating specific UWB pulses. In re Dailey and Eilers, 149 USPQ 47 (1966) see MPEP 2144.04.

Fullerton et al. teaches removing the DC component from output (**The time profile can have a shifted average DC level. In one embodiment, the average DC level is shifted such that each of the plurality of sample values has the same polarity. Under one arrangement, a DC component can be removed from the aggregate RF energy by a filter, page 4, paragraph 34**)

It would have been obvious to one of the ordinary skilled in the art at the time the invention was made to combine the teachings of Kim and Gerrits with Fullerton. One would be motivated to combine these teachings because in doing so it will remove DC component which is desired in UWB system.

Regarding claim 8, Kim and Gerrits with Fullerton et al. teaches claim 7.

Kim further teaches wherein the amplifier means comprises a biased transistor (**i.e. Q4 and Q5 are biased transistor, Fig. 5**).

Regarding claim 9, Kim and Gerrits with Fullerton et al. teaches claim 7.

Kim further teaches wherein the clock signal is a clock signal (**i.e. Input function section 4.1 is a hyperbolic tangent function, page 82**).

Regarding claim 10, Kim and Gerrits with Fullerton teaches claim 7.

Fullerton further teaches wherein the input signal is a saw tooth signal (**i.e. In an exemplary embodiment, each of the plurality of RF waveforms has a waveform type, such as an impulse, gaussian pulse, doublet pulse, triplet pulse, step pulse, triangle pulse, sawtooth pulse, or burst of cycles, and the bandwidth of each of the plurality of RF waveforms spans a frequency band of interest, page 4, paragraph 27**).

Regarding claim 11, Kim and Gerrits with Fullerton teaches claim 7,

Fullerton further teaches wherein the input signal is a pulse signal (**i.e. In an exemplary embodiment, each of the plurality of RF waveforms has a**

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waveform type, such as an impulse, gaussian pulse, doublet pulse, triplet pulse, step pulse, triangle pulse, sawtooth pulse, or burst of cycles, and the bandwidth of each of the plurality of RF waveforms spans a frequency band of interest, page 4, paragraph 27).

Regarding claim 12, Kim and Gerrits with Fullerton teaches claim 7.

Kim further teaches wherein system is implemented in an Integrated Circuit (**i.e. IC, page 82, col 2, section 3**).

Regarding claim 13, Kim and Gerrits with Fullerton teaches claim 7.

Kim further teaches wherein the system comprises current-voltage topology (**i.e. as shown in Fig. 5 it has both voltage and current input so it has voltage-current topology**).

Regarding claim 14, Kim and Gerrits with Fullerton teaches claim 7.

Kim further teaches wherein the system comprises voltage-voltage topology. (**Applicant admits page 6, paragraph 99 that other feedback topologies, for example, voltage-voltage, voltage-current and current-**

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current can be designed using similar blocks and same concept, so it can be done as shown in Fig. 5).

Regarding claim 15, Kim and Gerrits with Fullerton teaches claim 7.

Kim further teaches wherein system comprises voltage-current topology.
(Applicant admits page 6, paragraph 99 that other feedback topologies, for example, voltage-voltage, voltage-current and current-current can be designed using similar blocks and same concept, so it can be done as shown in Fig. 5).

Regarding claim 16, Kim and Gerrits with Fullerton teaches claim 7.

Kim further teaches wherein system comprises current-current topology.
(Applicant admits page 6, paragraph 99 that other feedback topologies, for example, voltage-voltage, voltage-current and current-current can be designed using similar blocks and same concept, so it can be done as shown in Fig. 5).

Regarding claim 17, the system has substantially same limitations as claim 7, thus the same rejection is applicable.

Regarding claim 18, the system has substantially same limitations as claim 8, thus the same rejection is applicable.

Regarding claim 19, the system has substantially same limitations as claim 9, thus the same rejection is applicable.

Regarding claim 20, the system has substantially same limitations as claim 10, thus the same rejection is applicable.

Regarding claim 21, the system has substantially same limitations as claim 11, thus the same rejection is applicable.

Regarding claim 22, the system has substantially same limitations as claim 12, thus the same rejection is applicable.

Regarding claim 23, the system has substantially same limitations as claim 13, thus the same rejection is applicable.

Regarding claim 24, the system has substantially same limitations as claim 14, thus the same rejection is applicable.

Regarding claim 25, the system has substantially same limitations as claim 15, thus the same rejection is applicable.

Regarding claim 26, the system has substantially same limitations as claim 16, thus the same rejection is applicable.

5. Claims 5 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hyunseok Kim (Design of CMOS Scholtz's monocycle pulse generator) (Kim hereafter) in further view of Gerrits et al. (**US 5635876**) in further view of **Roberts (US 2006/0166619)**.

Regarding claim 5, Kim with Gerrits teaches claim 3. however does not specifically disclose that it does Amplitude-modulation.

Roberts teaches wherein the modulated UWB signal is amplitude-modulated (**i.e. in the sections that follow, we examine a number of**

modulation schemes that have been proposed for UWB, including several forms of pulse amplitude modulation (page 3, paragraph 34)

It would have been obvious to one of the ordinary skilled in the art at the time the invention was made to combine the teachings of Kim and Gerrits with Roberts. One would be motivated to combine these teachings because Amplitude modulation technique is very easy to implement and can be implemented using only a few components. So, the amplitude modulation technique is relatively easy and cheap.

Regarding claim 6, Kim with Gerrits teaches claim 3. however does not specifically disclose that it does Pulse-Position modulation.

Roberts teaches wherein the modulated UWB signal is Pulse-Position modulated (PPM) (i.e. **in the sections that follow, we examine a number of modulation schemes that have been proposed for UWB, including several forms of pulse amplitude modulation (PAM), such as: positive pulse amplitude modulation(PPAM), on-off keying (OOK), and binary phase-shift keying (BPSK), as well as pulse-position modulation (PPM), page 3, paragraph 34).**

It would have been obvious to one of the ordinary skilled in the art at the time the invention was made to combine the teachings of Kim and Gerrits with Roberts. One would be motivated to combine these teachings because Pulse Position Modulation technique can be implemented non-coherently, such that the

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receiver does not need to use a phase locked loop to track the phase of the carrier. So, implementation is less complex and inexpensive.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANMAY K. SHAH whose telephone number is (571)270-3624. The examiner can normally be reached on Mon-Thu (7:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TANMAY K SHAH/
Examiner, Art Unit 2611

/Kevin M. Burd/
Primary Examiner, Art Unit 2611